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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,449	02/07/2002	Lukas Novotny	176/60921 (2-11150-912)	9533

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09/20/2005

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EXAMINER

STAHL, MICHAEL J

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

NA

Office Action Summary	Application No.	Applicant(s)	
	10/068,449	NOVOTNY ET AL.	
	Examiner	Art Unit	
	Mike Stahl	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-13,22-26,31-35,40-44 and 51 is/are allowed.
- 6) ☒ Claim(s) 1-8,14-21,27-30,36-39,45,46,48-50 and 52 is/are rejected.
- 7) ☒ Claim(s) 45 and 47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 28, 2005 has been entered. Claims 1-52 are pending.

Claim Objections

Amended claims 45 and 47 are objected to because they each recite that the structure focuses a portion of the light incident thereon onto a portion of the elliptical shaped mirror (both mirrors in the case of claim 47), and that the mirror directs the portion of light onto another portion of the structure. As noted in the last Office action, the structure does not actually focus light onto the elliptical mirror but merely directs it there (see fig. 3). Furthermore, each elliptical mirror focuses the portion of light onto the structure rather than just directing it there.

It appears that applicant attempted to amend claim 45 by following the suggestion made in the last Office action at p. 2; however, the correction was erroneously applied to line 8 of the claim instead of line 7. A similar change was incorporated into claim 47 when it was rewritten as an independent claim. Therefore to remedy the present objections, claim 45 should be amended so that line 7 recites "the structure directing" and line 8 recites "the elliptical shaped mirror focusing". Corresponding changes should be made to claim 47.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7-8, 14-18, 20-21, 27, 29-30, 36, and 38-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Ueyanagi (US 2001/0009541).

Claim 1: Ueyanagi discloses a system (figs. 1 or 6) comprising: an optical element 6; at least one structure 8 at least partially in a non-opaque portion of the optical element and at least adjacent a surface of the optical element; and a source 2 of light with a mode profile that provides an electric field which has a vector component substantially perpendicular to the surface of the optical element, the source positioned to propagate at least a portion of the light through the optical element onto an object 12, the structure 8 enhancing the electric field of the light which optically interacts with the object. See e.g. [0042], [0044], [0055], and [0059]-[0063]. Note that in the embodiment of fig. 1F, the structure 8 has at least one pointed tip (i.e. any of the four roughly 60 degree angles encompassing the shaded areas).

Claim 2: The system includes a guiding system for moving the optical element (which is part of an optical head 1) as shown in fig. 15.

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Claim 3: The system includes a focusing lens **5** positioned to focus the light from the source onto the optical element.

Claim 4: The optical element **6** is a solid immersion lens (SIL) as noted in [0044].

Claim 5: The optical element **6** may be regarded as an optical waveguide in that it has a refractive index higher than that of the surrounding medium, and in that it guides the beam from the source **2** toward the structure **8**.

Claim 7: The structure **8** protrudes out past the surface of the optical element **6** by approximately 40 nm, given that the depth of the etched groove **6f** in fig. 2B is 10 nm and the thickness of the Ti film **71** deposited over it in fig. 2C is 50 nm. See [0064].

Claim 8: The structure **8** may be coated with an antireflection film ([0072]).

Claims 14-18, 20-21: These claims are satisfied by the process of producing the Ueyanagi system described above with regard to claims 1-8.

Claims 27, 29-30, 36, and 38-39: The lens **6** of the Ueyanagi system described above with regard to claims 1 and 6-8 satisfies claims 27-30, and the process of making it satisfies claims 36-39 (see figs. 2A-2D).

Claims 1-3, 5-7, 14-16, 18-20, 27-29, and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Keilmann (US 4994818, cited in a previous action).

Claim 1: Keilmann discloses a system (fig. 3) comprising: an optical element **10**; at least one structure **20** at least partially in a non-opaque portion **22** of the optical element and at least adjacent a surface of the optical element, wherein the structure has at least one pointed tip; and a source of light **16** with a mode profile that provides an electric field which has a vector

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component substantially perpendicular to the surface of the optical element, the source positioned to propagate at least a portion of the light through the optical element onto an object, the structure **20** enhancing the electric field of the light which optically interacts with the object. The non-opaque portion includes a material (polyethylene in the reference example) which insulates the structure **20** and which is transparent at the wavelength of light **16**. See e.g. col. 3 ln. 29 – col. 4 ln. 2.

Claim 2: Insofar as the Keilmann device is directed to a tip for a scanning microscope, it is considered inherent that the system includes a guiding system for moving the optical element with the structure and/or the object.

Claim 3: The system may include a focusing lens positioned to focus the light from the source onto the optical element (col. 4 lns. 8-9).

Claim 5: The optical element is an optical waveguide.

Claim 6: The structure **20** is elongated and extends in a direction which is substantially perpendicular to the surface of the optical element.

Claim 7: The structure **20** protrudes out past the surface of the optical element.

Claims 14-16 and 18-20: These claims are satisfied by the process of producing the Keilmann system described above with regard to claims 1-3 and 5-7.

Claims 27-29 and 36-38: The Keilmann system described above is interpreted as a lens at least in the sense that it focuses light.

Claims 45-46, 48-50, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Shafer (US 4342503, cited in a previous action).

Claim 45: Shafer discloses a system comprising: an elliptical shaped mirror (the mirror surface 28 is spherical); at least one structure 10' positioned to optically interact with the elliptical shaped mirror; and a source of light with a mode profile that provides an electric field which has a vector component substantially perpendicular to a surface of the elliptical shaped mirror, the structure 10' directing at least a portion of the light (via its transparent portion) onto at least a portion of the elliptical shaped mirror 28, the elliptical shaped mirror 28 focusing the portion of light onto another substantially opaque portion 14 of the structure 10' enhancing the electric field of the light which optically interacts with an adjacent object. A specific object is not shown but is considered to be inherently present at or near focal plane 20 during use. See fig. 6.

Claim 46: It is considered inherent that, in use, the system includes a guiding system that moves either the elliptical shaped mirror 14 or the object (e.g. an eyepiece) since these are typical ways of adjusting the focus on a Schmidt-Cassegrain telescope.

Claim 48: The structure 10' is elongated and has at least one tip.

Claims 49, 50, and 52: These claims are satisfied by the process of making and using the Shafer system described above with regard to claims 45, 46, and 48.

Response to Amendment

The rejection under Ueyanagi has been modified to follow the amendments to claims 1, 14, 27, and 36. A new rejection based on Keilmann has been added to account for the amendments to claims 6, 19, 28, and 37 which are no longer anticipated by Ueyanagi. The previous rejection under Bernacki et al. (US 6036324) has been withdrawn in view of the

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limitations added to claims 45 and 49. However a new rejection based on Shafer has been made in order to account for those limitations. The previous objections to claims 9, 22, 31, 40, 47, and 51 have been withdrawn in view of the recasting of these claims in independent form.

Allowable Subject Matter

Claims 9-13, 22-26, 31-35, 40-44, and 51 are allowed. Claim 47 will be allowed if it is amended to overcome the objection set forth above. It is noted that claims 9, 22, 31, 40, 47, and 51 were among claims identified in the last Office action as containing allowable subject matter but depending from rejected base claims. These claims were rewritten as independent claims in the June 28, 2005 amendment. Claims 10-13, 23-26, 32-35, and 41-44 are allowable at least by virtue of their dependence from respective allowed base claims. With regard to the references which are newly applied in this action (Keilmann and Shafer), it is noted that neither reference anticipates or renders obvious the claims which are currently being allowed.

Conclusion

The additional references listed on the attached PTO-892 form are considered relevant to this application. US 4437746 is similar to the Shafer reference. US 2005/0078565 and US 6934240 both disclose devices very similar to those of the present invention but are not available as prior art based on this application's effective priority date. '240 is related to previously cited US 2003/0206513.

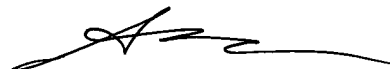
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Inquiries about this letter should be directed to Mike Stahl at 571-272-2360. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official communications which are eligible for submission by facsimile and which pertain to this application may be faxed to 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MSS

Mike Stahl
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September 18, 2005



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